

## ABSTRACT OF THE DISCLOSURE

The phase offset circuit of the present invention realizes a phase offset of a multiple of  $90^\circ$  by inverting  
5 the sign of signed binary data first, and then adjusts the amplitude of the signal. Finally, the phase offset calculator realizes a phase offset with a rotation angle smaller than  $90^\circ$  (for example, a fixed  $45^\circ$  offset).

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